

REMARKS

Reconsideration and allowance of the present application are respectfully requested. Claims 1, 2, 11, 12, 19, 25, 26, 29, 36, 37, 40 and 76-104 remain pending in the application. Claims 3-10, 13-18, 20-24, 27, 28, 30-35, 38, 39 and 41-75, as previously withdrawn from consideration, are now canceled. By this Amendment, claims 1, 19 and 29 are amended.

On page 2 of the Office Action, the Examiner requested cancellation of non-elected claims or other appropriate action under 37 CFR 1.144. In response, Applicants cancel previously withdrawn claims 3-10, 13-18, 20-24, 27, 28 30-35, 38, 39 and 41-75 without prejudice.

On page 2 of the Office Action, the Examiner objects to the drawings under 37 CFR 1.83(a). Specifically, the Examiner asserts that "the means for providing a plurality of phase-offset amplification channels, must be shown or the feature(s) canceled from the claim(s)." To address the Examiner's concerns, independent claims 1, 19 and 29 are amended to recite "a plurality of 90° hybrids arranged in tandem to output a plurality of amplification channels." Such a 90° hybrid is exemplified in Fig. 1 as a 90° hybrid 134 splitting a signal into two channels 136 and 138. Other exemplary 90° hybrids 144 and 146 are shown arranged in tandem with the first hybrid 134 to output four amplification channels 148, 150, 152 and 154, as shown in Fig. 1. Withdrawal of the objection to the drawings is respectfully requested.

On page 3 of the Office Action, the Examiner rejects claims 1, 19 and 29, along with the dependent claims, under 35 U.S.C. §112, first paragraph. Specifically, the Examiner asserts that "the newly amended claim(s) contains subject

matter which was not described in the specification." While Applicants traverse the Examiner's assertion, in the interest of expediting the prosecution of the application, independent claims 1, 19 and 29 are amended to address this and aforementioned issues. Clear support for the "plurality of 90° hybrids arranged in tandem to output a plurality of amplification channels" can be found in the specification at least page 7, lines 15-25, the 90° hybrids being exemplified in Fig. 1 as 134, 144 and 146.

Withdrawal of the rejection under 35 U.S.C. §112, first paragraph, is respectfully requested.

In numbered paragraph 2, page 4 of the Office Action, independent claims 1, 19 and 29, along with dependent claim 40, are rejected as being unpatentable over U.S. Patent 6,445,926 (Boch et al.) in view of U.S. Patent 5,574,967 ('967 Dent et al.). In numbered paragraph 3, page 6 of the Office Action, dependent claims 2, 11, 12, 25, 26, 36, 37, 87, 88, 92, 98, 99 and 101 are rejected as being unpatentable over the Boch et al. patent in view of the '967 Dent et al. patent and further in view of U.S. Patent 6,229,992 (McGeehan et al.). In numbered paragraph 4, page 8 of the Office Action, dependent claims 84, 85, 95, 96, 103 and 104 are rejected as being unpatentable over the Bock et al. patent in view of the '967 Dent et al. patent and the McGeehan et al. patent, and further in view of U.S. Patent 4,459,651 (Fenter). In numbered paragraph 5, page 9 of the Office Action, dependent claim 89 is rejected as being unpatentable over the Bock et al. patent in view of the '967 Dent et al. patent and the McGeehan et al. patent, and further in view of U.S. Patent 5,911,117 (Bhame et al.). In numbered paragraph 6, page 9 of the Office Action, dependent claims 76-79, 81-83, 88, 90, 91 and 97 are rejected as being unpatentable over the Bock et al. patent in view of the '967 Dent et al. patent and the McGeehan et al.

patent, and further in view of U.S. Patent 6,157,811 ('811 Dent). In numbered paragraph 7, page 11 of the Office Action, dependent claims 80, 93, 94, 101 and 102 are rejected as being unpatentable over the Bock et al. patent in view of the '967 Dent et al. patent and the McGeehan et al. patent, and further in view of U.S. Patent 5,745,009 (Leroux et al.). These rejections are respectfully traversed.

Applicants have disclosed an apparatus and method for full duplex wireless communication of information. As exemplified in Fig. 1, a power output means 106 supplies an output to a first 90° hybrid 134, such as a branchline coupler, for splitting the signal into two channels 136 and 138 (e.g., page 7, lines 15-17). Outputs from the hybrid 134 are supplied to amplifiers (e.g., 140 and 142). Outputs from the amplifiers 140 and 142 can be supplied to second and third hybrids (e.g., 144 and 146). For example, hybrids 144 and 146 can separate the inputs from channels 136 and 138 into four amplification channels 148, 150, 152 and 154, each possessing one of the amplifiers 156, 158, 160 and 162 (e.g., page 7, lines 21-25). Such 90° hybrids arranged in tandem permit the use of a plurality of separate, parallel stages, or channels, of amplification (e.g., page 8, lines 7 and 8). Further, first and second polarizations can isolate information transmission from information reception in full duplex communication (e.g., page 8, lines 17-24).

The foregoing features are broadly encompassed by claim 1, which recites an apparatus for full duplex wireless communication of information, including, among other features, means for performing at least one of modulating and demodulating information signals, the modulated information signal being boosted in power using a plurality of 90° hybrids arranged in tandem to output a plurality of amplification channels; and means for information transmission/reception, said information

transmission/reception means providing for information transmission using a first polarization and for information reception using a second polarization to thereby isolate information transmission from information reception in full duplex communication. Claims 19 and 29 recite similar features.

The Boch et al. patent discloses that an equipment employed at a customer premise site 50 can operate with a single antenna which employs dual orthogonal polarization (col. 4, lines 54-57). However, the Boch et al. patent does not teach or suggest a modulated information signal being boosted in power using a plurality of 90° hybrids arranged in tandem to output a plurality of amplification channels, as recited in claim 1. Claims 19 and 29 recite similar features.

On page 5 of the Office Action, the Examiner relies on the '967 Dent patent to assert that "in figure 6, Dent '967 teaches power output means which includes a plurality of amplification channels 72." However, the N output signals are "DRIVE and COMPLEMENTARY DRIVE signals" so that each signal is a constant amplitude signal (col. 8, lines 21-25). The '967 Dent patent does not teach or suggest a plurality of 90° hybrids arranged in tandem to output a plurality of amplification channels.

Further, the '967 Dent patent merely discloses that "two similar amplifiers 20 and 21 can be driven 90 degrees out of phase and their outputs combined using a 90 degree or quadrature coupler" (col. 3, lines 18-21). The quadrature directional coupler 23 merely serves to couple two signals into one for propagation to an antenna 22. The '967 Dent patent does not teach or suggest means for performing at least one of modulating and demodulating information signals, the modulated information signal being boosted in power using a plurality of 90° hybrids arranged in

tandem to output a plurality of amplification channels, as recited in claim 1, and as similarly recited in claims 19 and 29.

The McGeehan et al. patent, the Fenter patent, the Bhamé et al. patent, the '811 Dent patent, and the Leroux et al. patent, considered individually or in combination as suggested by the Examiner, do not cure the deficiencies of the Bock et al. patent and the '967 Dent patent. They were variously applied in combination with the Bock et al. patent and the '967 Dent patent to reject dependent claims. These applied references, considered individually or in combination with the Bock et al. patent and the '967 Dent patent as suggested by the Examiner, do not teach or suggest a modulated information signal being boosted in power using a plurality of 90° hybrids arranged in tandem to output a plurality of amplification channels, as recited in claim 1, and as similarly recited in claims 19 and 29.

For the foregoing reasons, Applicant's claims 1, 19 and 29 are allowable. The remaining claims depend from the independent claims and recite additional advantageous features which further distinguish over the documents relied upon by the Examiner. Further, because the withdrawn claims depend from the respective generic and independent claims, Applicants respectfully submit that the present application is in condition for allowance.

All objections and rejections raised in the Office Action having been addressed, it is respectfully submitted that the application is in condition for allowance and a Notice of Allowance is respectfully solicited.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: September 11, 2006

By: 

Patrick C. Keane
Registration No. 32858

P.O. Box 1404
Alexandria, VA 22313-1404
703 836 6620